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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/994,039 | 11/27/2001 | Yong Sung Ham | 049128-5043 | 7745 |
| 9629 | 7590 | 04/30/2004 | EXAMINER | |
| MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004 | | | CHOW, DOON Y | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2675 | 6 |

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,039

Applicant(s)

HAM, YONG SUNG

Examiner

Dennis-Doon Chow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-16 and 19-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al (4775891) in view of Hirota (6552705) and Johnson (WO 99/05567).

Aoki discloses a method and an apparatus for driving a liquid crystal display, comprising: modulating source data (e.g. D1-D3) using registered data previously provided and supplying the modulated data to a liquid crystal panel in a first field and applying data (Q1-Q3) different from the modulated data to the liquid crystal panel in a second field. For example, Aoki discloses that the output level of the data control circuit 4 is switched for every field according to the frame signal. More specifically, when the frame signal is at "0" level, the upper three bits of the input data O1 to O4 are fed as data D1 to D3 to the data control circuit 4, to be used for the display for one field. In the next field, the frame signal is at "1" level. In this case, if the least significant bit O of the output data O1 to O4 of the A/D converter 3 is "0", the upper three bits are provided as data D1 to D3 from the data control circuit 4. If the least significant bit O4 is "1", "1" is added to the upper three bits, and the resultant data are provided as data D1 to D3 to the data control circuit. In other words, the data without modulation is applied to the LCD in a first field of one frame and the data with modulation is applied to the LCD in

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second field of one frame. It is noted that Aoki does not specifically disclose applying the modulation data in the first field and applying the data without modulation in a second field. However, since the two fields of the data are combining into one frame, the gradation of the data for one frame would not be changed if the order of the two fields were changed. Thus, it would have been obvious to one of ordinary skill in the art to display the modulation data in the first field and to display the data without modulation in the second field because it is an alternative way for displaying two fields of data in the frame without changing the gradation data.

Aoki does not explicitly disclose using a look-up table for modulating source data.

Johnson, in the same display field, discloses using a look-up table for modulating source data (Fig. 7).

It would have been obvious to one of ordinary skill in the art to use Johnson's look-up table in Aoki's apparatus for modulating the source data. This would have been obvious because the look-up table modulates the source data a lot faster than the modulation done in a real time calculation.

Aoki also fails to disclose applying a black voltage to the display panel for a portion of the frame period.

Hirota, in the same display field, discloses applying a modulated (compensated) signal, a video signal, and a black signal to a liquid crystal panel (col.10, lines 46-61). Hirota further discloses the modulated signal (A) being applied first, and the video signal being applied between the modulated signal and the black signal (col.10, lines 46-61).

Thus, it would have been obvious to one of ordinary skill in the art use Hirota's black signal in a portion of the frame period of Aoki's display. This would have been obvious because the black signal prevents color disturbance in the display panel (see col. 11, lines 25-28, Hirota).

The apparatus of the modified Aoki inherently comprises a timing controller for sequentially applying the modulated data, source data, and black data/signal to the display panel, and a delay circuit for delaying two of the data while the other data is applied to the display panel so that these data are applied to the display panel in a synchronize manner.

Allowable Subject Matter

3. Claims 17 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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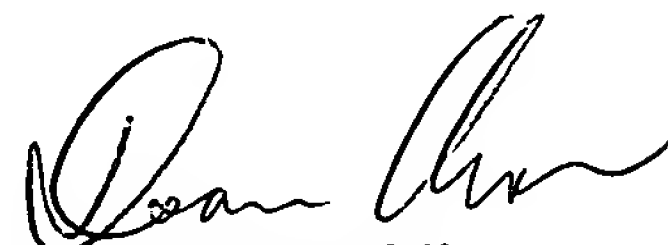
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis-Doon Chow whose telephone number is 703-305-4398. The examiner can normally be reached on 8:30-6:00, Alternate Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras can be reached on 703-305-9720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

D. Chow
April 29, 2004


DENNIS-DOON CHOW
PRIMARY EXAMINER